

Claims

1. Optical device for (de-)multiplexing optical signals having a plurality of wavelength separated channels, said device comprising:

- a multiple channel port,
- at least a first and a second separated channel port, and
- a diffraction unit defining wavelength specific beam paths for optical beams between the multiple channel port and the separated channel ports, said diffraction unit including a diffraction grating,

wherein said diffraction unit further includes a plurality of mirrors adapted for receiving and reflecting the optical beams from and to the diffraction grating, wherein the mirrors are individually angled for reflecting the optical beams at different angles to the diffraction grating.

2. The optical device of claim 1, wherein said diffraction unit further includes a focusing lens adapted to focus the optical beams coming from the diffraction grating onto individual ones from the plurality of mirrors.
3. The optical device of claim 2, wherein the focusing lens defines a conjugated plane with respect to the diffraction

grating, said plurality of mirrors being disposed along the conjugated plane.

4. The optical device of claim 1, wherein the diffraction grating comprises a longitudinal axis, said plurality of mirrors being angled with respect to the longitudinal axis.
5. The optical device of claim 4, wherein the diffraction grating is arranged rotatably around said longitudinal axis.
6. The optical device of claim 1, wherein said diffraction unit further includes a plurality of collimators, with at least one collimator being arranged between the diffraction grating and each one of the multiple channel port and the separated channel ports.
7. The optical device of claim 1, wherein said diffraction unit further includes a spherical mirror adapted to focus the optical beams coming from the diffraction grating onto individual ones from the plurality of mirrors.
8. An add/drop multiplexer for use in a broadband optical communication system, in particular a WDM or DWDM communication system, wherein an optical device according to claim 1 is used.
9. Broadband optical communication system, in particular WDM or DWDM communication system, having an optical transmitter for transmitting an optical signal, at least one opti-

cal receiver for receiving the optical signal, and an optical communications link connecting the transmitter and the receiver, wherein at least one of the transmitter, the receiver and the communications link comprise an optical device according to claim 1.

10. The communication system of claim 9, further comprising at least a first and a second optical amplifier stage which are arranged in parallel to each other and which are adapted to amplify optical signals in different wavelength bands, wherein the optical device is configured to split the optical signal into at least a first and a second wavelength band, and wherein the first and the second wavelength bands are separately fed to one of the first and second optical amplifier stages for being separately amplified.
11. An optical amplifier having at least a first and a second amplifier stage arranged in parallel to each other, each amplifier stage being adapted to amplify optical signals in a different wavelength band, using an optical device according to claim 1 for splitting an incoming broadband optical signal into the different wavelength bands, said optical device feeding the first and second amplifier stages.
12. A method of demultiplexing an optical signal having a plurality of wavelength separated channels, said method comprising the steps of:
 - providing a diffraction grating,

- directing a beam carrying the optical signal onto the diffraction grating for generating a plurality of diffracted beams running along wavelength dependant beam paths, and
- coupling out the diffracted beams,

wherein by the steps of

- providing a plurality of mirrors with a mirror in each of the wavelength dependant beam paths, and
- reflecting the diffracted beams back to the diffraction grating by means of the plurality of mirrors,
- wherein the mirrors are individually angled for reflecting the optical beams at different angles to the diffraction grating.